
Distribution of Nurse Practitioners and Physician Assistants: Implications of Legal Constraints and Reimbursement

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PUBLIC POLICY in health care delivery today is focused on primary health and medical services, of an acceptable quality, accessible to urban and rural populations. More attention has been centered on rural populations. Chief among national and State government efforts to increase access to services in rural areas are those of the National Health Service Corps and the Area Health Education Centers (AHECs) or AHEC-like consortia. Private foundations such as Commonwealth and Kellogg (1) and Robert Wood Johnson are also concerned with this issue. And both public and private sectors

have been training nurse practitioners (NPs), physician assistants (PAs), and MEDEX, with the hope that they would go to rural areas that could not support a full-time physician or where physicians preferred not to practice primary care.

In this paper I present data on the distribution of NPs and PAs in 1976 and 1977, the 1978 status of legal constraints affecting their distribution, some baseline data by which to judge future change in their distribution in rural areas, and I explore the potential impact of changes in reimbursement for their services.

Distribution of NPs and PAs

No information has been available on the distribution of nurse practitioners and physician assistants with respect to the federally defined medically underserved areas (MUAs) of the United States. Therefore, in 1977, the National Center for Health Services Research undertook a study to link the latest available informa-

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tion on the locations of NPs and PAs to these MUAs which, for the purposes of this paper, are referred to as "shortage areas."

The data were compiled from two sources with different bases. Because there is no single source of the number of U.S. nurse practitioners, the programs preparing NPs were asked to supply the last available address—whether residence or practice of their graduates. For physician assistants, however, the Association of Physician Assistant Programs (APAP) maintains a roster of all physician assistants who have passed the National Certifying Examination. The APAP routinely surveys all physician assistants on its roster for location of practice. Therefore, responses to the surveys are from individual PAs.

Several caveats regarding these data must be kept in mind:

1. The nurse practitioners are limited to graduates of formal training programs, and their location is based on the last address these programs had for them. This address does not distinguish between residence and location of practice. Of 180 programs with at least 1 graduating class, 169 responded. Newly initiated programs with only one class of graduates were not pursued beyond one followup telephone call for responses, but older programs were queried until they responded. Therefore, the response rate of 95 percent from the programs can be assumed to include a majority of the formally trained nurse practitioners in 1977. It is well to emphasize again that these are nurse practitioners who have completed a formal training program in one of several areas—for example, pediatrics, family medicine, or geriatrics—as opposed to on-the-job training.

2. Data on physician assistant distribution are only suggestive. They are based on the 1976 survey of all categories of PAs by the APAP and are therefore contingent on response rate and reporting. The universe in 1976 was 4,963 PAs of all kinds who had passed the National Certifying Examination. The APAP located 4,583 PAs, and 3,674 (80 percent) responded (2). Of the 3,674 responses, only 3,493 were available for computer analysis; no information was available on location of practice for 777 PAs. Therefore, usable data for location were limited to 2,716 PAs, or 54 percent of the population.

3. The definition of medically underserved areas has changed over time. The designation used for this study was a physician to population ratio of 1:4,000. Two new designations are now being used: (a) an index for underserved areas that includes percentage of population over 65, per capita income, infant mortality rate,

and physician to population ratio and (b) an upward ratio of physician to population of 1:2,000, as opposed to 1:4,000.

The index promises to be a more realistic assessment of health and medical care needs, but unfortunately area designations according to the index were not available in the Health Resources Administration data bank at the time the data in this study were analyzed. The study does, however, reflect the distribution of NPs and PAs with regard to the more conservative estimate of medically underserved areas as a ratio of 1 physician to 4,000 population as opposed to 1 physician to 2,000 population. It should be noted that the presence of NPs or PAs does not change a shortage area designation.

4. None of the data represent the universe of NPs or PAs in 1977. Although the NP numbers presumably reflect most of the graduates in the various programs, the PA data, representing little more than half of the graduates who responded to the 1976 questionnaire and gave location of practice, must be interpreted with caution.

The following aggregate data on the distribution of NPs and PAs in shortage versus nonshortage areas (2) show that fewer than one-third were employed in shortage areas. This distribution may reflect the prevailing constraints imposed by third-party reimbursement for their services and State legislation regarding their practice

Area	NPs, 1977	PAs, 1976	Total
Nonshortage	4,777	1,919	6,696
Shortage	2,235	797	3,032
Total	7,012	2,716	9,728

The distribution data are shown by State in table 1. Although these data do not reflect the intra-State distribution according to shortage areas, variations in the distributions may be presumed to reflect statewide policies regarding reimbursement and legal constraints.

Factors Affecting Distribution

This section is based on a study by Miller and Byrne, Inc. (3), who summarized the fluid and sometimes contradictory status of factors affecting the distribution of NPs and PAs. These investigators found that legal recognition of NPs has not been addressed expressly in many States. Some States assume that the expanded role of the NP is not significant enough to place the nurse in a new professional category, and therefore they have not moved to recognize a new legal status of the NP. Conversely, the role of PAs must be recognized if

they are to practice in all States. Most States have moved toward recognition through delegatory or regulatory statutes. Three States have not—Mississippi, Missouri, and New Jersey.

Concerning the adoption of educational and examination requirements, the Miller and Byrne study found variations among the States in the use of examinations for certifying NPs. Only six States (Alabama, Arizona, Kentucky, Mississippi, New Mexico, and South Carolina) specifically require NPs to pass an examination before certification. This certification by States is not related to the American Nurses Association's certification for excellence in practice.

Graduation from approved educational programs is required in lieu of examinations for licensing and certifying physician assistants in almost all States that recognize PAs. Twenty-two States require that PAs pass the National Certifying Examination in order to practice.

The requirement for physician supervision has been considered to have a negative impact on the distribution of NPs and PAs. Some States require direct supervision (on the premises) of nurse practitioners, but most do not. The number of NPs a physician may supervise is not specified by State law.

For physician assistants on the other hand, there is usually an explicit limitation. Of the States that specify the number of PAs a physician may supervise, approximately one-half specify one and the other half two. Only Illinois and Iowa have liberal regulations allowing the PA to practice away from the physician so long as there is some form of periodic supervision.

A very controversial issue has been the prescription and dispensing of drugs by NPs and PAs. According to Miller and Byrne, only four States (Arizona, California, Maine, North Carolina) allow a NP to prescribe or monitor drug use in any way. The same four States allow PAs to prescribe and monitor drug use, and the same restrictions as for NPs prevail. In the few instances where drugs can be prescribed by a nonphysician, specific reasons are identified.

With regard to reimbursement, the Miller and Byrne report points out that under Medicare, reimbursement for NP and PA services varies with the practice setting. The salaries of NPs and PAs employed by a hospital, nursing home, federally funded health center, or health maintenance organization are included in the cost formula for reimbursement under Part A of Title XVIII (Medicare). Under Part B, reimbursement for services delivered outside institutional settings, for example, private practices, has been limited to services

provided by a NP or PA under the immediate supervision (on the premises) of a physician and only for those services normally delegated by a physician. The Rural Health Clinics Act (Public Law 95-210) retains the institutional employment provisions for cost-based reimbursement but extends supervision to include that by physicians not on the premises.

For Medicaid reimbursement for NP and PA services, current policies are marked by two major problems. First, changes made in State laws are not recognized in reimbursement practices in the States. Second, many States have not clearly addressed questions of supervision, training, definitions of NP and PA roles, reimbursable services, or appropriate levels of reimbursement. While Blue Shield and other commercial carriers are reimbursing for NP and PA services in experimental programs, they indicated to Miller and Byrne that they did not foresee changing their policies at present. They will continue to reimburse for these services through the physician who is supervising the NP or PA on site.

To make the distributions shown in table 1 more meaningful—since large States may have a large number of NPs and PAs compared with smaller States, that number may still be insignificant in increasing access to services—actual numbers were translated to ratios per 1,000 population by use of the Area Resource File (ARF) of the Health Resources Administration (4). Unfortunately, the ARF lists county characteristics by an urban-rural dichotomy, rather than by shortage designations. For this paper, it was assumed that "rural" is synonymous with "shortage area" under the present definition. It is recognized that this assumption is not necessarily valid, but it is one that has been accepted at the Federal policy level. The distribution data were re-analyzed in this format.

Table 2 shows the 16 States with the highest nurse practitioner or physician assistant ratios per 1,000 population for urban and rural designations. Three States—Arizona, Nevada, and Massachusetts—have the highest population ratios in rural areas for both NPs and PAs.

The States with the lowest NP and PA population ratios are not presented in tabular form; all of these States had 0.00:1,000 population ratios for NPs and PAs. There were too few NPs in 14 States and too few PAs in 11 States for calculation of a ratio per 1,000 population for rural areas for other than academic reasons. Five States had too few of both NPs and PAs in rural areas—Connecticut, Iowa, Missouri, Rhode Island, and Texas.

A comparison of tables 1 and 2 shows that some States with very low numbers of NPs and PAs had the highest number per 1,000 population, for example, Arizona and Nevada, whereas a State with a relatively high number of NPs and PAs, for example, California, had a lower population ratio. Because urban populations are of concern, it must be noted that 15 States had a 0.00:1,000 population ratio for PAs but only 2—Kansas and Nebraska—had a 0.00:1,000 population ratio for NPs. The reasons for these urban differences are beyond the scope of this paper.

Relating Distribution to Facilitators

The next step was to compare those States with the highest NP or PA population ratios and those with the least with respect to those factors most likely to facilitate the distribution of NPs and PAs. State laws view NPs and PAs as separate kinds of nonphysician providers, and therefore their sanctions for them are different. Information was taken from the previously

cited study by Miller and Byrne regarding factors considered most important in influencing the distribution of NPs and PAs. Examples were selected from the States listed in table 2 to see if there were differences in facilitating factors between States with high NP or PA population ratios and those not listed in a table because the population ratios were 0.00. (It is interesting that States with high "urban" ratios rarely meet the urban definition of population centers greater than 50,000, the basis for the Health Resources Administration urban-rural dichotomy—for example, Nevada and Vermont).

Table 3 shows a comparison of selected legal constraints and reimbursement policies for nurse practitioners between States with high and low rural NP population ratios. Table 4 shows a similar comparison for physician assistants. The major difference between tables 3 and 4 is related to diagnosis, treatment, and prescription of drugs for patients, which represent explicit constraints for nurse practitioners

Table 1. Distribution of nurse practitioners in 1977 and physician assistants in 1976 in shortage (underserved) areas, by State

State	Nurse practitioners		Physician assistants		State	Nurse practitioners		Physician assistants	
	Shortage	Nonshortage	Shortage	Nonshortage		Shortage	Nonshortage	Shortage	Nonshortage
Alabama	40	36	29	16	Montana	15	35	5	4
Alaska	5	16	15	32	Nebraska	1	10	8	22
Arizona	51	43	21	19	Nevada	7	51	2	14
Arkansas	10	74	4	10	New Hampshire .	7	31	5	20
California	512	535	96	122	New Jersey ..	53	131	1	18
Colorado	8	106	8	59	New Mexico ..	24	41	23	18
Connecticut ..	26	83	17	43	New York	314	537	52	137
Delaware	10	6	..	5	North Carolina	27	141	20	134
District of Columbia ..	...	54	..	27	North Dakota .	2	18	5	18
Florida	18	84	27	107	Ohio	72	283	29	68
Georgia .....	...	68	14	95	Oklahoma ...	2	24	17	77
Hawaii .....	...	21	..	6	Oregon	62	27	14	6
Idaho	12	30	7	7	Pennsylvania .	114	182	67	70
Illinois	177	51	21	20	Rhode Island .	...	37	..	5
Indiana	89	63	11	42	South Carolina	37	59	20	32
Iowa	4	65	3	48	South Dakota .	9	2	16	7
Kansas	3	5	21	30	Tennessee ...	18	134	4	22
Kentucky	36	47	10	26	Texas	19	191	4	138
Louisiana	2	49	2	5	Utah	28	29	7	11
Maine	20	62	16	19	Vermont	26	34	14	3
Maryland	115	60	27	45	Virginia	25	193	9	21
Massachu- setts .....	...	430	..	54	Washington ..	78	41	55	39
Michigan	10	110	17	85	West Virginia.	28	10	13	19
Minnesota ...	29	127	7	14	Wisconsin ...	37	172	25	35
Mississippi ..	32	51	2	7	Wyoming	8	4	4	10
Missouri	13	84	3	28	Total ..	2,235	4,777	797	1,919

SOURCES: Reference 2 and a survey of nurse practitioner programs, National Center for Health Services Research, 1977.

but not for physician assistants. The ambiguous nature of these State provisions is exemplified for NPs by Nevada's law that prohibits these activities but reimburses NPs at 55 percent of the physician's fee. It is also interesting that Nevada reimburses PAs at 100 percent of the physician's fee.

It is evident from these data that State policies regulating the employment of nurse practitioners and physician assistants are greater determinants of their utilization than are reimbursement policies at present. The "chicken or the egg" conundrum prevails here. If third-party payers relax their policies on paying for services delivered by a NP or PA in a practice, will States then change their policies on employing NPs and PAs? If States change their policies, will third-party payers reimburse for the services of these nonphysician providers? It appears that States liberal in both legal sanctions and reimbursement policies draw nonphysician providers. It seems reasonable to assume that if those conservative States that currently discourage (or do nothing to encourage) NP and PA practice were to change their approach, there would indeed be an influx of nonphysician providers into those States.

I have focused on a very small subset of providers of health and medical care. Because nonphysician pro-

viders are relatively new in the United States, they have been the center of a great deal of attention. Since

Table 2. Rank order of States with the highest nurse practitioner and physician assistant per 1,000 population ratios, 1977¹

State	Nurse practitioners		Physician assistants	
	Urban	Rural	Urban	Rural
Arizona		0.31	....	0.09
Nevada	0.13	0.29	....	0.13
Massachusetts ...	0.07	0.20	....	0.20
California		0.15	....	....
Vermont	0.14	0.11	....	0.07
New Hampshire		0.10	0.03	....
District of Columbia	0.07	....	0.03	....
Maine	0.08	....	0.03	0.05
Montana	0.08	....	....	....
New Mexico			0.03	0.09
North Dakota			0.03	0.05
North Carolina			0.03	....
Utah		0.10	....	....
Oklahoma			0.03	....
Wyoming			0.04	....
Florida				0.09

¹ The larger population ratios of NPs reflect greater actual numbers than PAs. The ratios of PAs to population in these States might also be affected by lack of data on PAs. See text discussion of these constraints.

SOURCES: References 2 and 4.

Table 3. Selected facilitators for selected high- and low-ranking States in nurse practitioner (NP) per 1,000 rural population ratios, 1977

Selected facilitators	High-ranking States				Low-ranking States		
	Arizona (0.31)	Nevada (0.29)	Massachusetts (0.20)	California (0.15)	Illinois (0.00)	Oklahoma (0.00)	Texas (0.00)
Prohibit diagnosis, treatment, prescribing	No	Yes	No		¹ Yes	¹ Yes	Yes, but amended May 1977
NP examination required	Yes	No	Not stated	No			No
Physician supervision	Remote	Collabora- tion	Board to decide	Not specified			Yes
Practice locations defined	Not stated	Not stated	Board to decide	No restric- tions			No restric- tions
Can prescribe drugs	Prepack- aged, no dispensing in rural areas	No	Board to decide	New pilot project			No
Direct reimbursement ..	No	Yes, 55 percent of MD fee	In process for Medicaid	No, but new regulations in process			

¹ These States prohibit nurses from practicing in the "extended role"; therefore additional sanctions not listed.

NOTE: Figures in parentheses are ratios per 1,000 population.
SOURCE: Reference 3.

Table 4. Selected facilitators for selected high- and low-ranking States in physician assistant (PA) per 1,000 rural population ratios, 1977

Selected facilitators	High-ranking States				Low-ranking States		
	Massachusetts (0.20)	Nevada (0.13)	Arizona (0.09)	Florida (0.09)	Minnesota (0.00) ¹	Missouri (0.00) ¹	Texas (0.00) ¹
Delegatory statute .No	No	No	No	Yes			No
Regulatory statute .Yes	Yes	Yes	Yes	Yes			Yes
Examination required Yes	No	No					No
Ratio of PAs to MDs 2	2, if popu- lation over 16,000	Not stated		2			1
Physician supervision Remote	Remote	Remote	Remote	Easily available			On premises
Practice location . . No restric- tion	No restric- tion	Not in hospital	Yes	No restric- tion			No restric- tion
Prescribe drugs . . No	No	Yes		Not specified			No
Reimbursement . . . No	Yes, 100 percent of MD fee	No		No			No

¹ No provisions.

NOTE: Figures in parentheses are ratios per 1,000 population.

SOURCE: Reference 3.

they were perceived as filling a void in needed services, it may be well to reconsider them in the context of an anticipated oversupply of physicians.

The (HRA) Physician Extender Work Group proposed that the following issues be addressed (5):

- The future demand for nurse practitioners and physician assistants by potential employers in both ambulatory and institutional settings;
- The productivity of NPs and PAs in various practice settings;
- The differential cost impacts between MD and NP or PA delivery of health and medical services;
- The willingness of NPs and PAs to remain in practice in remote areas or inner cities any more than MDs even if legal and reimbursement constraints were removed; and
- If these constraints were removed, consumer acceptance of NPs and PAs in lieu of a MD.

The last issue has been the source of much debate. Proponents of NPs and PAs point to studies showing patient satisfaction with care received and acceptance of care by NPs in experimental studies, as well as testimonials that some services are better provided by non-physicians, as indicators of acceptance. On the other hand, no studies have been done on general consumer acceptance. The number of patients seen by NPs and PAs in remote practice sites (physicians not on premises) generally has been low. Whether this low number reflects the needs of the population or whether most of those in need continue to travel farther for services is not known. It appears, however, that these issues cannot be addressed adequately by empirical research

until the problems of legal and reimbursement constraints are resolved.

Comment

The distribution of nurse practitioners and physician assistants has not achieved policy goals with respect to their deployment to medically underserved (shortage) areas. There does appear to be a definite correlation between State policies on reimbursement and legal constraints regarding NPs and PAs and their distribution. Although this finding is not surprising, it points out the problems that must be resolved if nonphysician providers are to be used to increase access to health and medical care.

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